

# SYSTEM AND METHOD FOR FACE RECOGNITION USING SYNTHESIZED TRAINING IMAGES

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## ABSTRACT

A system and method that includes a virtual human face generation technique which synthesizes images of a human face at a variety of poses. This is preferably accomplished using just a frontal and profile image of a specific subject. An automatic deformation technique is used to align the features of a generic 3-D graphic face model with the corresponding features of these pre-provided images of the subject. Specifically, a generic frontal face model is aligned with the frontal image and a generic profile face model is aligned with the profile image. The deformation procedure results in a single 3-D face model of the specific human face. It precisely reflects the geometric features of the specific subject. After that, subdivision spline surface construction and multi-direction texture mapping techniques are used to smooth the model and endow photometric detail to the specific 3-D geometric face model. This smoothed and texturized specific 3-D face model is then used to generate 2-D images of the subject at a variety of face poses. These synthesized face images can be used to build a set of training images that may be used to train a recognition classifier.